

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 89-025
AMENDMENT TO REQUIREMENTS FOR
WASTE DISPOSAL TO LAND

RICHMOND SANITARY SERVICE
WEST CONTRA COSTA CLASS II LANDFILL
RICHMOND, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. On June 15, 1988 the Board adopted Order No. 88-109, Waste Discharge Requirements for Richmond Sanitary Service (hereinafter called the discharger). The discharger owns and operates the West Contra Costa Sanitary Landfill a portion of which is a Class II landfill.
2. Specification 8 of Order No. 88-109 states that chemical analyses will be conducted on sewage sludge and other industrial wastes according to the self-monitoring program. The Specification states that the wastes will be acceptable for disposal if the analyses results indicate the wastes contain constituents below the values given in Attachment D or wastes in a list amended by the Board.
3. Authorization to the Executive Officer to establish an amended list would give needed flexibility in responding to disposal requests for wastes for which Attachment D concentrations are excessively stringent.
4. This Order governs maintenance of an existing facility and does not have a significant effect on the environment pursuant to Section 21084(a) of the California Environmental Quality Control Act and Section 15310 of the Resources Code.
5. The Board has notified the discharger and interested agencies and persons of its intent to issue waste discharge requirements, and has provided them with an opportunity to submit their written views and recommendations.
6. The Board heard and considered in a public meeting all comments pertaining to the discharge.

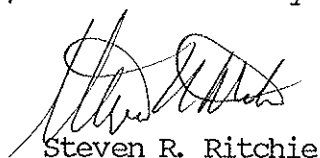
IT IS HEREBY ORDERED, that this Board's Order No. 88-109 be amended as follows:

1. Specification 8 shall be changed as follows:

Chemical analyses will be conducted on sewage sludge and other industrial wastes according to the self-monitoring program. The wastes will be acceptable for disposal if the analyses results indicate the wastes contain constituents below the values given in Attachment D or wastes in a list amended by the Executive Officer. Wastes which contain constituents listed in Article 9 of Title 22 and which have not been assigned Soluble and Total Threshold Limiting concentrations are

considered hazardous unless given a variance by the Department of Health Services.

I, Steven R. Ritchie, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on February 15, 1989.



Steven R. Ritchie

Attachment A: Designated levels for Chemical Constituents (Order No. 88-109
Attachment D)

Attachment A: Designated Levels For Chemical Constituents

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid		Total in a Solid	
	5.0 mg/l (51)	5.0 g/kg (51)	1.48 g/kg (5)	14.8 mg/l (5)
Aluminum	1.48 mg/l	1.48 g/kg (5)	22g/kg	220mg/l
Ammonia	22mg/l			
Ammonium				
Antimony	10 mg/l (8)	10 g/kg (8)		100 mg/l (8)
Arsenic	48 mg/l	48 g/kg		480 mg/l
Barium	7 mg/l	7 g/kg		70 mg/l
Beryllium	23 mg/l	23 g/kg		230 mg/l
Boron	100 mg/l	100 mg/kg		1.0 mg/l
Bromide	125 mg/l (51)	125 mg/kg (51)		1.25 mg/l (51)
Cadmium	125 mg/l (51)	125 mg/kg (51)		1.25 mg/l (51)
Chlorine	1.06 g/l	1.06 g/kg		10.6 g/l
Chloride				
Chlorine dioxide	3.8 mg/l	3.8 g/kg		38 mg/l
Chlorite	125 mg/l (51)	125 mg/kg (51)		1.25 mg/l (51)
Chromium (III)	500 mg/l (12)	500 mg/kg (12)		5.0 mg/l (12)
Chromium (VI)				
Cobalt	20 mg/l (12)	20 g/kg (5,12)		200 mg/l (5,12)
Copper	2.0 mg/l	200 mg/kg		20 mg/l
Cyanide	10 mg/l	10 g/kg		100 mg/l
Fluoride				
Hardness				
Hydrogen sulfide	11.8 mg/l	11.8 g/kg		118 mg/l
Iodide	5 mg/l	5 g/kg		50 mg/l
Iron	500 mg/l	500 mg/kg		5.0 mg/l
Lead	500 mg/l	500 mg/kg		5.0 mg/l
Manganese	20 mg/l	20 mg/kg		200 mg/l
Mercury	134 mg/l	134 mg/kg		1.34 mg/l
Molybdenum	450 mg/l (22)	450 g/kg (22)		4.5 g/l (22)
Nickel	10 mg/l (89)	10 g/kg (89)		100 mg/l (89)
Nitrate				
Nitrite				
Oxygen, dissolved				
pH				
Phosphorus	100 mg/l	100 mg/kg		1.0 mg/l
Selenium	500 mg/l	500 mg/kg		5.0 mg/l
Silver	7 mmol/mol			70 mmol/mol
Specific conductivity (SC)	8.4 mg/l (51)	8.4 g/kg (51)		84 mg/l (51)
Strontium	2.5 g/l	25 g/l		25 g/l
Sulfate	130 mg/l	130 mg/kg		1.3 mg/l
Titanium	200 mg/l	200 mg/kg		2.0 mg/l
Total dissolved solids (TDS)				
Uranium				
Vanadium				
Zinc	300 mg/l (51)	300 g/kg (5,12)		3.0 g/l (5,12)

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid		Total in a Liquid	
	200 µg/l 28 mg/l (41) (57)	20 mg/kg 2.8 mg/kg (41) 320 mg/kg	In a Solid	In a Liquid
Acenaphthene				2 mg/l
Acenaphthylene				280 mg/l (41)
Acetamin				32 mg/l
Acrylamide	(57)	58 mg/kg		5.8 mg/l
Acrylonitrile	1.5 µg/l	150 µg/kg		15 µg/l
Alachlor	100 µg/l	10 mg/kg		1.0 mg/l
Aldicarb	0.74 µg/l	74 mg/kg		7.4 mg/l
Aldrin	17.5 mg/l	1.75 g/kg		17.5 mg/l
Amben				
Anthrone	28 mg/l (41)	2.8 mg/kg (41)		280 mg/l (41)
Atrazine	150 µg/l	15 mg/kg		1.5 mg/l
Azinphos-methyl	875 µg/l	87.5 mg/kg		8.75 mg/l
Baygon	900 µg/l	90 mg/kg		9 mg/l
Benellin	7 mg/l	700 mg/kg		70 mg/l
Benetazon	80 µg/l	8.0 mg/kg		800 µg/l
Benz(a)anthracene	28 mg/l (41)	2.8 mg/kg (41)		280 mg/l (41)
Benzene	(57)	700 mg/kg		70 µg/l
Benzene, chlorinated				
Benzene, dichloro-				
Benzene, trichloro-				
Benzidine	(57)	400 mg/kg		40 mg/l
Benzdioxins, dichloro-				
Benzodibiphenylene	1.2 mg/l	120 mg/kg		12 mg/l
Benzobifluoranthene	100 µg/l	10 mg/kg		1.0 µg/l
Benzofluoranthene	28 mg/l (41)	2.8 mg/kg (41)		280 mg/l (41)
Benzol(g,h,i)perylene	28 mg/l (41)	2.8 mg/kg (41)		280 mg/l (41)
Benzol(g,h,i)perylene	28 mg/l (41)	2.8 mg/kg (41)		280 mg/l (41)
Benzol(g,h,i)perylene	92 mg/l	9.2 mg/kg		920 mg/l
alpha-BHC	163 mg/l	16.3 mg/kg		1.63 µg/l
beta-BHC	186 mg/l	18.6 mg/kg		1.86 µg/l
gamma-BHC	500 µg/l (43,51)	50 mg/kg (43,51)		5 mg/l (43,51)
delta-BHC	123 mg/l	12.3 mg/kg		1.23 µg/l
Technical-BHC				
Bis(2-chloroethyl) ether	0.3 µg/l	30 mg/kg		3 µg/l
Bis(2-chloroisopropyl) ether	347 µg/l	34.7 mg/kg		3.47 mg/l
Bis(chloromethyl) ether	0.038 mg/l	3.8 mg/kg		0.38 mg/l
Bromacil	875 µg/l	87.5 mg/kg		8.75 mg/l
Bromodichloromethane	(57)	190 mg/kg		19 µg/l
Bromomethane	(57)	190 mg/kg		19 µg/l
Bromonethane	(57)	190 mg/kg		19 µg/l
4-Bromophenyl phenyl ether	700 µg/l	70 mg/kg		7 mg/l
Butachlor				
n-Butyl benzyl phthalate	3.5 mg/l	350 mg/kg		35 mg/l
Caplan	600 µg/l	60 mg/kg		6 mg/l
Carbaryl	50 µg/l	5 mg/kg		500 µg/l
Carburelure				
Carbon disulfide				
Carbon tetrachloride	(57)	300 mg/kg		30 µg/l
Catechol	220 µg/l (59)	22 mg/kg (59)		2.2 mg/l (59)
Chlordane	4.8 mg/l	480 mg/kg		4.8 mg/l

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid	Total	
		In a Solid	In a Liquid
Chlorobenzene	(57)	3 mg/kg	300 µg/l
4-Chloro- <i>p</i> -cresol	18 mg/l	1.8 mg/kg	180 µg/l
4-Chloro- <i>m</i> -cresol	30 mg/l	3 mg/kg	300 µg/l
6-Chloro- <i>m</i> -cresol	200 µg/l	20 mg/kg	2 mg/l
Chlorotoluene	(57)	190 mg/kg	19 µg/l
Chloromethane	(57)	180 mg/kg	18 µg/l
2-Chloronaphthalene	1.0 µg/l	100 mg/kg	10 µg/l
2-Chlorophenol	1 µg/l	100 mg/kg	10 µg/l
3-Chlorophenol	1 µg/l	100 mg/kg	10 µg/l
4-Chlorophenol	(57)	37 mg/kg	3.7 mg/l
Chloropicrin	3.5 mg/l	350 mg/kg	35 mg/l
Chloropropane	28 mg/l (41)	2.8 mg/kg (41)	280 µg/l (41)
Chloropyridine	1.0 mg/l	100 mg/kg	100 µg/l
Chrysene	80 mg/l	8 mg/kg	800 µg/l
2,4-D	2 mg/l	200 mg/kg	20 mg/l
Dieldrin	(57)	25 mg/kg	2.5 µg/l
DDCP			
DDO			
DDT	2.4 mg/l (13)	240 mg/kg (13)	24 mg/l (13)
Densol			
Diazinon	140 µg/l	14 mg/kg	1.4 mg/l
Dibenz(a,h)anthracene	28 mg/l (41)	2.8 mg/kg (41)	280 µg/l (41)
Dibromochloromethane	(57)	100 mg/kg	10 mg/l
Dibromophthalate	7.70 mg/l	770 mg/kg	77 mg/l
Dicamba	87.5 µg/l	8.75 mg/kg	875 µg/l
1,2-Dichlorobenzene	(57)	10 mg/kg	1 mg/l
1,3-Dichlorobenzene	(57)	20 mg/kg	2 mg/l
1,4-Dichlorobenzene	(57)	300 mg/kg	30 µg/l
3,3-Dichlorobenzidine	100 mg/l (52)	10 mg/kg (52)	1.0 µg/l (52)
Dichlorodifluoromethane	(57)	180 mg/kg	18 µg/l
1,1-Dichloroethane	(57)	20 mg/kg	2 mg/l
1,2-Dichloroethane	(57)	1 mg/kg	100 µg/l
1,1-Dichloroethylene	(57)	33 mg/kg	3.3 µg/l
cis-1,2-Dichloroethylene	(57)	18 mg/kg (184)	1.8 mg/l (184)
trans-1,2-Dichloroethylene	(57)	18 mg/kg (184)	1.8 mg/l (184)
Dichlorofluoromethane	(57)	180 mg/kg	18 µg/l
Dichloromethane	(57)	40 mg/kg	4 µg/l
2,3-Dichlorophenol	400 mg/l	40 mg/kg	40 µg/l
2,4-Dichlorophenol	3.0 µg/l	300 mg/kg	30 µg/l
2,5-Dichlorophenol	5 µg/l	500 mg/kg	50 µg/l
2,6-Dichlorophenol	2 µg/l	200 mg/kg	20 µg/l
3,4-Dichlorophenol	3 µg/l	300 mg/kg	30 µg/l
1,2-Dichloropropane	(57)	560 mg/kg	56 µg/l
1,3-Dichloropropane	(57)	87 mg/kg (28)	8.7 mg/l (28)
Dieldrin	0.71 mg/l	710 mg/kg	7.1 mg/l
Diesel Oil	100 µg/l (51)	10 mg/kg (51)	1.0 mg/l (51)

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid	Total	
		In a Solid	In a Liquid
Di-2-ethylhexyl phthalate	42 mg/l	4.2 mg/kg	420 µg/l
Diethyl phthalate	3.5 g/l	350 mg/kg	35 g/l
Dimethlate	1.4 mg/l	140 mg/kg	14 mg/l
2,4-Dimethylphenol	4.0 mg/l	400 mg/kg	40 mg/l
Dimethyl phthalate	3.19 g/l	313 mg/kg	31.3 g/l
2,4-Dinitro- <i>p</i> -cresol	134 µg/l	13.4 mg/kg	1.34 mg/l
Dinitrophenol	700 µg/l	70 mg/kg	7 mg/l
2,4-Dinitrotoluene	1.1 µg/l	110 mg/kg	11 µg/l
2,6-Dinitrotoluene	380 µg/l	38 mg/kg	3.8 mg/l
Dioctyl phthalate	(57)	58.8 mg/kg (51)	5.88 mg/l (51)
1,4-Dioxane	400 µg/l	40 mg/kg	4 mg/l
Diphenylhydrazine	420 mg/l	42 mg/kg	4.2 mg/l
Diquat	1 mg/l	100 mg/kg	10 mg/l
Diazinon	7 µg/l	700 mg/kg	70 µg/l
Endosulfan	740 µg/l	74 mg/kg	7.4 mg/l
Endosulfan sulfate	740 µg/l	74 mg/kg	7.4 mg/l
Endothal	2 mg/l	200 mg/kg	20 mg/l
Endrin	2 µg/l	200 mg/kg	20 µg/l
Epichlorohydrin	(57)	3.54 mg/kg	354 µg/l
Ethars, chloroalkyl-			
Ethers, halo-			
Ethion	390 µg/l	39 mg/kg	3.9 mg/l
Ethylbenzene	(57)	28 mg/kg	2.8 mg/l
Ethylene dibromide	(57)	500 mg/kg	50 mg/l
Ethylene glycol	55 mg/l (51)	5.5 mg/kg (51)	550 µg/l (51)
Ethylene, dichloro-			
ETU	2.5 µg/l	250 mg/kg	25 µg/l
Ferbam	875 µg/l	87.5 mg/kg	8.75 mg/l
Fluoranthene	420 µg/l	42 mg/kg	4.2 mg/l
Fluorene	28 mg/l (41)	2.8 mg/kg (41)	280 µg/l (41)
Folpet	11.2 mg/l	1.12 mg/kg	112 mg/l
Formaldehyde	(57)	3 mg/kg (51)	300 µg/l (51)
Glyphosate	5 mg/l	500 mg/kg	50 mg/l
Heptachlor	2.8 mg/l	280 mg/kg	28 mg/l (187)
Heptachlor epoxide	2.8 mg/l (107)	280 mg/kg (107)	28 mg/l (107)
Hexachlorobenzene	7.2 mg/l	720 mg/kg	72 mg/l
Hexachlorobutadiene	4.5 µg/l	450 mg/kg	45 µg/l
Hexachlorocyclopentadiene	10 µg/l	1 mg/kg	100 µg/l
Hexachloroethane	18 µg/l	1.8 mg/kg	180 µg/l
Hexachlorophene	70 µg/l	7 mg/kg	700 µg/l
n-Hexane	(57)	400 mg/kg (51)	40 mg/l (51)
Indene(1,2,3- <i>a</i> , <i>b</i>)pyrene	28 mg/l (41)	2.8 mg/kg (41)	280 µg/l (41)
Isochlorene	52 mg/l	5.2 mg/kg	520 mg/l
Isopropanol	100 µg/l (58)	10 mg/kg (58)	1 mg/l (58)
Kerosene	(57)	10 mg/kg (51)	1 mg/l (51)

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid	Total	
		In a Solid	In a Liquid
Malachion	1.6 mg/l	160 mg/kg	16 mg/l
Mureb	350 ppb	35 mg/kg	3.5 mg/l
MCPA	87.5 ppb	8.75 mg/kg	875 ppb
Methanes, Nite-			
Methoxychlor	1.75 mg/l	175 mg/kg	17.5 mg/l
Methyl ethyl ketone	1.0 mg/l	100 mg/kg	10 mg/l
Methyl methacrylate	8 mg/l	172 mg/kg	17.2 mg/l
Methyl Parathion	300 ppb	300 mg/kg	30 mg/l
Methylchlor	440 ppb	44 mg/kg	4.4 mg/l
Methobuzin	52.5 mg/l	5.25 g/kg	525 mg/l
Miras	48 ppb	4.8 pp/kg	480 ppb
Mollinate	200 ppb	20 mg/kg	2.0 mg/l
Nabam			
Naphthalene			
Naphthalenes, chlorinated			
Nitralin	7 mg/l	700 mg/kg	70 mg/l
Nitrobenzene	5 ppb (S1)	500 pp/kg (S1)	50 ppb (S1)
2-Nitrophenol	280 ppb (37.51)	28 mg/kg (37.51)	2.8 mg/l (37.51)
4-Nitrophenol	280 ppb (37.51)	28 mg/kg (37.51)	2.8 mg/l (37.51)
Nitrophenol	200 ppb (S1)	20 pp/kg (S1)	2.0 mg/l (S1)
Nitrosamines			
N-Nitrosodibutylamine	64 ppb	6.4 pp/kg	640 ppb
N-Nitrosodiallylamine	8 ppb	800 pp/kg	80 ppb
N-Nitrosodimethylamine	14 ppb	1.4 pp/kg	140 ppb
N-Nitrosodiphenylamine	48 ppb	4.8 pp/kg	480 ppb
N-Nitrosopropylamine			
N-Nitrosopyrrolidine	180 ppb	18 pp/kg	1.8 mg/l
trans-Nonachlor			
Orythordane			
PAH			
Paraquat	28 ppb	2.8 pp/kg	280 ppb
Parathion	595 ppb	59.5 mg/kg	5.95 mg/l
PCBs	300 ppb	30 mg/kg	3 mg/l
Pentachlorobenzene	0.78 ppb	78 pp/kg	7.8 ppb
Pentachloroethane	740 ppb	74 mg/kg	7.4 mg/l
Pentachlorophenol			
Phenanthrene	300 ppb	30 mg/kg (S1)	3.0 mg/l (S1)
Phenol	28 ppb (41)	2.8 pp/kg (41)	280 ppb (41)
Phenols, chlorinated	3.0 mg/l (40)	300 mg/kg (40)	30 mg/l (40)
Phenols, nitro-			
Phenols, nitro-chlorinated			
Phorate	7 ppb	700 pp/kg	70 ppb
Phthalate esters			
Phthalate	10.5 mg/l	1.05 g/kg	105 mg/l
Picloram	6.48 mg/l	648 mg/kg	64.8 mg/l
Propachlor			
Propenes, dichloro-			
Propanil	1.4 mg/l	140 mg/kg	14 mg/l

ORGANIC CONSTITUENT	Soluble (Extractable) from a Solid	Total	
		In a Solid	In a Liquid
Propazine, dichloro-			
Propazine, dichloro-	3.25 mg/l	325 mg/kg	32.5 mg/l
Pyrene	87 mg/l	8.7 mg/kg	8.7 mg/l
Pyrene	28 ppb (41)	2.8 pp/kg (41)	280 ppb (41)
Resorcinol	500 ppb (S1)	50 mg/kg (S1)	5 mg/l (S1)
Rotenone	50 ppb	5 mg/kg	500 ppb
Sinazine	1.5 mg/l	150 mg/kg	15 mg/l
Siprene	140 ppb	14 pp/kg	1.4 mg/l
2,4,5-T	20 ppb	2 mg/kg	200 ppb
TCCO	0.00013 ppb	0.013 pp/kg	0.0013 ppb
Terracel	9 ppb	900 pp/kg	90 ppb
1,2,4,5-Tetrachlorobenzene	380 ppb	38 mg/kg	3.8 mg/l
1,1,2,2-Tetrachloroethane	(S7)	170 pp/kg	17 ppb
Tetrachloroethylene	(S7)	4 mg/kg	400 ppb
2,3,4,6-Tetrachlorophenol	10 ppb	1.0 mg/kg	100 ppb
2,3,5,6-Tetrachlorophenol			
Thiobencarb	10 ppb	1 mg/kg	100 ppb
Thiram	350 ppb	35 mg/kg	3.5 mg/l
Toluene	(S7)	100 mg/kg	10 mg/l
Toxaphene	7.1 ppb	710 pp/kg	71 ppb
2,4,5-TP	100 ppb	10 mg/kg	1.0 mg/l
1,2,4-Trichlorobenzene	(S7)	200 mg/kg	20 mg/l
1,1,1-Trichloroethane	(S7)	600 pp/kg	60 ppb
1,1,2-Trichloroethane	(S7)	5 mg/kg	500 ppb
Trichloroethylene	(S7)	190 pp/kg	19 ppb
Trichlorofluoromethane	10 ppb	1.0 mg/kg	100 ppb
2,4,5-Trichlorophenol	12 ppb	1.2 mg/kg	120 ppb
2,4,6-Trichlorophenol			
Trichlorofluoroethane			
Trifluralin	7 mg/l	700 mg/kg	70 mg/l
Trinitrophenol	200 ppb (S1)	20 mg/kg (S1)	2 mg/l (S1)
Triphenyl	70 ppb	7 mg/kg	700 ppb
Vinyl chloride	(S7)	15 pp/kg	1.5 ppb
Vydate	1.6 mg/l	160 mg/kg	16 mg/l
Xylene(s)	(S7)	620 mg/kg	62 mg/l
Zincb	350 ppb	35 mg/kg	3.5 mg/l
Ziram	875 ppb	87.5 mg/kg	8.75 mg/l

- Lim. of Quant.**
- (7-d) For 7 day exposure or less.
(10-d) For 10 day exposure or less.
(24-hr) For 24 hour exposure or less.
- (1) For hardness expressed in mg/l as CaCO₃, criterion = $e(0.847)^{[Hardness]-0.9694}$ ppt.
(2) Value based on hardness of 40 mg/c valve increases with increasing hardness.
(3) Based on EPA No-Adverse-Effect Level.
(4) Unclad level in soil.
(5) Above DHS Threshold Limit Concentration for "hazardous waste".
(6) As(V) effects on plants.
(7) Based on MCL
(8) Excluding barite (BaSO₄).
(9) Based on fish toxicity.
(10) For hardness expressed in mg/l as CaCO₃, criterion = $e(0.7652)^{[Hardness]-3.409}$ ppt.
(11) Inconsistency (STLC ≥ TILC) resulting from change of STLC units from mg/kg of waste to mg/l of extract.
(12) Use for total chromium if valence unknown.
(13) Factor of 1000 used to derive level due to strong environmental attenuation.
(14) For total recoverable asbestos.
(15) For sediment.
(16) Toxicity to one species of fish after 2000 hours of exposure.
(17) Mortality in a fish species after 30 day exposure.
(18) For single or combined concentrations of carcinogens listed in Reference 17, § 6000(a)(1).
(19) For total trihalomethanes (THMs); based largely on technology and economics.
(20) For sum of halomethanes.
(21) Based on limited evidence.
(22) For sum of chlorinated benzenes.
(23) Toxicity to a fish species exposed for 7.5 days.
(24) For dichlorobenzenes.
(25) NOAA SNARL; to be refined in the future.
(26) National Ambient Water Quality Criterion; Reference 16.
(27) For sum of dichloroethylenes.
(28) For sum of dichloropropenes.
(29) For sum of dichlorobenzene.
(30) Effective 9 January 1989.
(31) Adverse behavioral effects occur to one species.
(32) An CaCO₃; minimum criterion except where noted conditions are less.
(33) For hardness expressed in mg/l as CaCO₃, criterion = $e(1.124)^{[Hardness]-3.089}$ ppt.
(34) Flower impairment in a fish species occurs.
(35) Mortality to early life stages of a fish species occurs.
(36) For industrial supply criteria see Reference 16.
(37) For sum of monoaromatics.
(38) Toxicity to algae occurs.
(39) For chlorinated systems only.
(40) Values will be lower if threatened water is distributed before consumption.
(41) For sum of polynuclear aromatic hydrocarbons.
(42) 1978 World Health Organization (WHO) European Standards for drinking water based on the composite analysis of benzene(a), benzene(b), benzene(c), benzene(d), benzene(e), benzene(f), benzene(g), benzene(h), benzene(i), benzene(j), benzene(k), benzene(l), benzene(m), benzene(n), benzene(o), benzene(p), benzene(q), benzene(r), benzene(s), benzene(t), benzene(u), benzene(v), benzene(w), benzene(x), benzene(y), benzene(z).
- (43) For sum of benzene hexachloride isomers.
(44) Draft; child/adult; no nitrogen.
(45) For sum of phthalate esters.
(46) For sum of chlorophenols.
(47) For sum of terphenylbenzenes.
(48) For sum of chlorinated naphthalenes.
(49) Free cyanide [CN⁻ and HCN] only; values 10-fold higher if path of contaminant migration is via surface drainage.
- (50) For sum of DDT and its metabolites.
(51) Chronic SNARL estimated to be 10-fold lower than listed 7-day or 10-day value in calculating this level.
(52) For sum of dibromobenzenes.
(53) For sum of dinitrobenzenes.

- (54) From Reference 12.
(55) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8100)(\sqrt{\text{hardness}})]+1.0611$ mg/l.
(56) For sum of nitroamines.
(57) Waste Extraction Test (WET) not possible due to volatility.
(58) For sum of heterocyclics.
(59) Chemical SMARL was estimated to be 100-fold lower than the listed 24-hour value in calculating this level.
(60) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8100)(\sqrt{\text{hardness}})]+3.0887$ mg/l.
(61) Acceptable Residue Limit in drinking water under the Federal Insecticide, Fungicide, and Rodenticide Act.
(62) D:z:f value; pH between 6.5 and 9.0.
(63) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8545)(\sqrt{\text{hardness}})]+1.4851$ mg/l.
(64) Based on heptane.
(65) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.9122)(\sqrt{\text{hardness}})]+1.4043$ mg/l.
(66) For hardness expressed in mg/l as CaCO₃, criterion = $e[(1.273)(\sqrt{\text{hardness}})]+4.7051$ mg/l.
(67) For hardness expressed in mg/l as CaCO₃, criterion = $e[(1.272)(\sqrt{\text{hardness}})]+1.4601$ mg/l.
(68) Dinitroaniline.
(69) For Anelcor 1290.
(70) At pH 6.8, caused 90% reduction in growth of yeasting osidyea salmon in 50-day test.
(71) May be present as a decomposition product in Furban, Maron, Nelson, Thiam, Zimb, and Zinn.
(72) As HCl.
(73) Recommended level; Upper level = 800 mg/l; Short-term level = 600 mg/l.
(74) Units in parentheses; Recommended level; Upper level = 1000; Short-term level = 2000.
(75) Recommended level; Upper level = 1000; Short-term level = 1500 mg/l.
(76) U.S. Public Health Service (1982); Reference 10.
(77) For 1,2-Dichloroethane.
(78) Reference 13 unless noted otherwise.
(79) For elemental phosphorus; marine or estuarine.
(80) Discharges may at that option meet this limitation as a total chromium level.
(81) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8400)(\sqrt{\text{hardness}})]+1.1648$ mg/l.
(82) For the sum of chlorides (calc. and trace), trans-narcotics, psychedelics, hallucinants, and hallucinogenics.
(83) A decrease in the number of oyd cells occurs.
(84) Adverse effects on a fish species exposed for 100 days.
(85) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8400)(\sqrt{\text{hardness}})]+0.2812$ mg/l.
(86) For sum of nitrified phenols.
(87) For sum of chlorinated phenols.
(88) For sum of chlorinated phenols.
(89) As nitrophenol.
(90) For intermediate chlorine sources see Reference 10, Table 8.
(91) See Reference 10.
(92) For sum of 3,3'-Dichlorodiphenyls and its salts.
(93) For total chlorine.
(94) For As(III).
(95) For As(V).
(96) EC50 for eastern oyster embryos.
(97) Varies with pH and temperature; see Reference 10 to select water quality goal.
(98) For total residual chlorine.
(99) For sum of chlorine-produced alcohols.
(100) Proposed.
(101) 2,100,000 (Rat) proposed; limited to flares longer than 10 pm.
(102) Proposed; includes alcohols soluble and alcohols soluble.
(103) Proposed; for total chromium.
(104) For the sum of calc. and trans- isomers.
(105) Exhausted protective value; Reference 9.
(106) Based on intermediate Reference 9.
(107) Based on heptane; Reference 9.
(108) Based on exposure through water only / through water and fish; Reference 9.
(109) For hardness expressed in mg/l as CaCO₃, criterion = $e[(1.72)(\sqrt{\text{hardness}})]+3.327$ mg/l.
(110) Criterion = $e[(1.005)(\sqrt{\text{pH}}+5.290)]$ pp/l.
(111) Criterion = $e[(1.005)(\sqrt{\text{pH}}+4.330)]$ pp/l.
(112) For hardness expressed in mg/l as CaCO₃, criterion = $e[(0.8473)(\sqrt{\text{hardness}})]+0.7814$ mg/l.

REFERENCES

Drinking Water Standards (MCLs)

1. California Department of Health Services, California Administrative Code, Title 22, Division 4, Chapter 15, "Domestic Water Quality and Monitoring".
 2. U. S. Environmental Protection Agency, Federal Register, Volume 52, No. 139 (Wednesday, 9 July 1977), pp. 25090-25117.
 3. U. S. Environmental Protection Agency, Federal Register, Volume 51, No. 25 (Thursday, 9 February 1966), pp. 4618-4619.
 4. U. S. Environmental Protection Agency, Federal Register, Volume 50, No. 229 (Thursday, 14 November 1965), pp. 47142-47171.
 5. U. S. Environmental Protection Agency, Federal Register, Volume 50, No. 219 (Wednesday, 13 November 1965), pp. 46880-46932, 46934-47022.
- ## State Action Levels
6. California Department of Health Services, Sanitary Engineering Branch, "Drinking Water Action Levels Recommended by the Department of Health Services" (January 1967).
- ## Non-Cancer Health Advisories and Suggested No-Adverse-Response Levels (MAGRLs)
7. U. S. Environmental Protection Agency, "Office of Drinking Water Health Effects Advisory Document" (various dates).
 8. National Academy of Sciences, "Drinking Water and Health", Vols. 1 (1977), Vol. 2 (1980), Vol. 4 (1983), and Vol. 5 (1983).
 9. U. S. Environmental Protection Agency, "Water Quality Advisories" (March 1988).

1-in-a-Million Cancer Risk Levels

References 7, 8, and 9.

10. U. S. Environmental Protection Agency, "Quality Criteria for Water, 1960" (May 1968) plus updates (various dates).
11. U. S. Environmental Protection Agency, Federal Register, Vol. 49, No. 104 (Wednesday, 15 February 1984) [TCDD cancer risk level].

Estimated Ambient Water Quality Criteria (EPA)

Reference 10.

2. U. S. Environmental Protection Agency, "Water Quality Criteria, 1972" (1978)

Unfiltered Water Quality Goals

3. Ayres, R. S. and D. W. Wootton, "Water Quality for Agriculture", Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1965)

Other Water Quality Goals

4. U. S. Environmental Protection Agency, Federal Register, Vol. 48, No. 194 (Wednesday, 8 October 1983) p. 45512.
5. Stille, M., "Handbook of Toxic and Hazardous Chemicals", Noyes Publications (1981).

Proleter Aquatic Life Criteria

References 9, 10, and 12.

California Ocean Plan - Limiting Concentrations

15. California State Water Resources Control Board, "1983 Water Quality Control Plan: Ocean Waters of California".

Saltwater Aquatic Life Criteria

References 9 and 10.

Hazardous Waste Threshold Limit Concentrations

17. California Department of Health Services, California Administrative Code, Title 22, Division 4, Chapter 28, "Criteria for Identification of Hazardous and Extremely Hazardous Wastes".
18. William Guen, California Department of Health Services, Alternative Technology and Policy Development Section, Sacramento, memorandum "Hazardous Levels of Cytobis in Water" (29 March 1985).